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PALEOEARTHQUAKE STUDY OF THE OLINGHOUSE FAULT ZONE NEAR RENO, NEVADA

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Technical abstract

The Olinghouse fault zone is a northeast trending, left-lateral fault located at the transition between the Basin and Range and Sierra Nevada in the northern Walker Lane, Nevada. A trench exposure indicates that two earthquakes have occurred since 3,400±190 cal. ybp. This implies a recurrence interval as low as 1,700 years in the latest Holocene (assuming regular return), reflecting a recent paleoearthquake activity much higher than previously assumed for the fault. Because the Olinghouse fault strikes to within 15 km of the Reno, Nevada urban area, this result has important consequences for local seismic hazard analyses.

Non-technical abstract

The Olinghouse fault zone is a northeast trending, left-lateral fault located in and along the Pah Rah range north of the Truckee River. We studied the history of large, ground-rupturing earthquakes on the Olinghouse fault by mapping fault-related features and digging a trench across the fault. We find evidence that two earthquakes have occurred since 3,400±190 years ago. This evidence suggests that the Olinghouse fault has large earthquakes more often than previously assumed. Because the Olinghouse fault strikes to within 15 km of the Reno, Nevada urban area, this result has important consequences for local seismic hazard analyses.